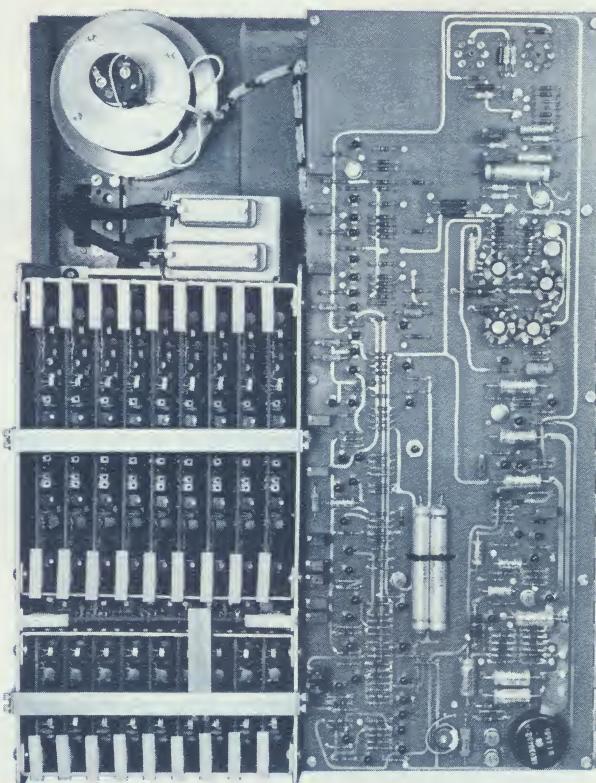




## DIGITAL READ/WRITE SYSTEM TYPE DR-1200



The Parsons Model DR-1200 digital read/write system has been expressly designed to provide a compact, rugged, field operable unit. Its small size, low weight, and low power consumption make it ideal for use in remote areas requiring operation from battery power sources. The unit employs 8-1/2 inch diameter IBM reels utilizing 1/2 inch wide magnetic tape and is available with heads to record either 7 or 9 track IBM format at data densities up to 800 bits-per-inch. The unit may be externally programmed to record in a gapped data format.

The transport is designed to operate from a 12-volt battery power source and consumes approximately 100 watts when operating at 120 ips. A single rubber coated capstan is used to drive the tape. The tape is wrapped approximately 270° around the capstan, eliminating the conventional pinch roller. The capstan is directly driven by a printed circuit motor whose speed is controlled by a magnetic tachometer. A specially designed tape chute is employed to edge guide the tape on the supply side of the capstan, resulting in exceptionally low skew. The unit is designed for unidirectional read and write, but is capable of bidirectional search. Each reel is directly driven by its own printed circuit torque motor. A quick release mechanism is incorporated to facilitate tape loading. Friction brakes are employed to prevent tape spillage when power is off. A uniform acceleration characteristic, resulting in predictable and repeatable start/stop time and distances, is achieved by the capstan motor servo system.

All electronics employ fully transistorized circuits and are mounted on printed circuit boards. The transport control and drive electronics are mounted integral with the transport, while the signal electronics are individual plug-in cards. A card rack, capable of holding all the necessary cards for 9 track read/write operation, is contained in the rear of the transport. Card access is from the rear.

## TAPE TRANSPORT SPECIFICATIONS

TAPE SPEEDS	Electrically switchable over three speeds: 120, 60, and 30 ips, or 80, 40, and 20 ips Other speeds available on special order
TAPE SPEED ACCURACY	All speeds accurate within $\pm 2\%$ of nominal
REEL SIZE	8-1/2 inch diameter IBM plastic reels containing 1200 feet of 1.5 mil Mylar tape. Features quick action hubs for fast reel change
TAPE FORMAT	7 or 9 track IBM compatible. Other configurations available on special order
PACKING DENSITY	Up to 800 bits-per-inch IBM compatible. Higher densities with single channel clocking available on special order
TAPE WIDTH	$0.5^{\frac{+.000}{-.004}}$ inch
END-OF-TAPE SENSING	Photoelectric approximately 250 feet remaining and IBM reflective end-of-tape and beginning-of-tape
MAGNETIC HEADS	All-metal front-surface headstacks. 7 and 9 track write only, read only, or redundant (read after write) are available. Other configurations available on special order
WEIGHT	Less than 45 pounds including dust cover and 9 tracks of write and read electronics with skew correction
START AND STOP TIMES	2 seconds $\pm 5\%$ in both forward and reverse directions at any standard tape speed. Faster start and stop times are available if highest speed is less than 120 ips
START AND STOP DISTANCES	120 inches $\pm 10\%$ in both forward and reverse directions at 120 ips. For other speeds start and stop distances are directly proportional to tape speed.
OPERATING POWER	
TRANSPORT	11 to 16 vdc. Less than 110 watts @ 12 vdc when operating at 120 ips
ELECTRONICS	9 vdc $\pm 1\%$ . Less than 3 watts when operating 9 tracks of read and write electronics with skew correction.
TRANSPORT CONTROLS	Plus 4 to 9 volts for <u>Run</u> and <u>Reverse</u> . Contact closure to transport control common for medium and low speed.
TEMPERATURE, OPERATING	-20° to +65°C, continuous
TEMPERATURE, STORAGE	-55° to +85°C
SIZE	20 x 15 x 7 inches including 9 tracks of read/write electronics with skew correction
DUST COVER	A hinge, latching dust cover with a view through front window is standard equipment.

## READ/WRITE ELECTRONICS

All transistorized printed circuit cards with plug-in connectors. The read/write electronics utilize the NRZM saturation type of recording in accordance with the requirements of the IBM format. The reproduce electronics employ peak detection read circuitry to ensure maximum data accuracy. Skew correction is applied to the reproduced data, providing time coincidence of all parallel data outputs. Error rate is less than 1 bit in  $10^6$ .

# READ/WRITE ELECTRONIC SPECIFICATIONS

## READ AMPLIFIER (each card)

FUNCTION	Amplitude Logic "1"	Amplitude Logic "0"	Threshold Amplitude	Rise & Fall Time (max)	Pulse Width	Input Impedance (max)	Output Impedance (max)	Current Source (max)	Current Sink (max)
DATA OUTPUT	$2 \pm 0.7$ vdc (NOTE 1)	$0 \pm 0.4$ vdc	N/A	.25 $\mu$ s	Adjustable for 7 $\mu$ s	N/A	550 ohms	15 ma	2 ma
TAPE SPEED INPUT HI, MED, & LOW (NOTE 2)	$2 \pm 0.7$ vdc	$0 \pm 0.4$ vdc	1.0 vdc	1 ms	Duration of record	750 ohms (NOTE 3)	N/A		
OPERATING POWER	9 vdc $\pm$ 1% at 75 ma								
TYPE REPRODUCE	NRZM								
TEST POINTS	Reproduce amplifier output, differentiator output, limiter output, Schmitt output, "OR" gate output								

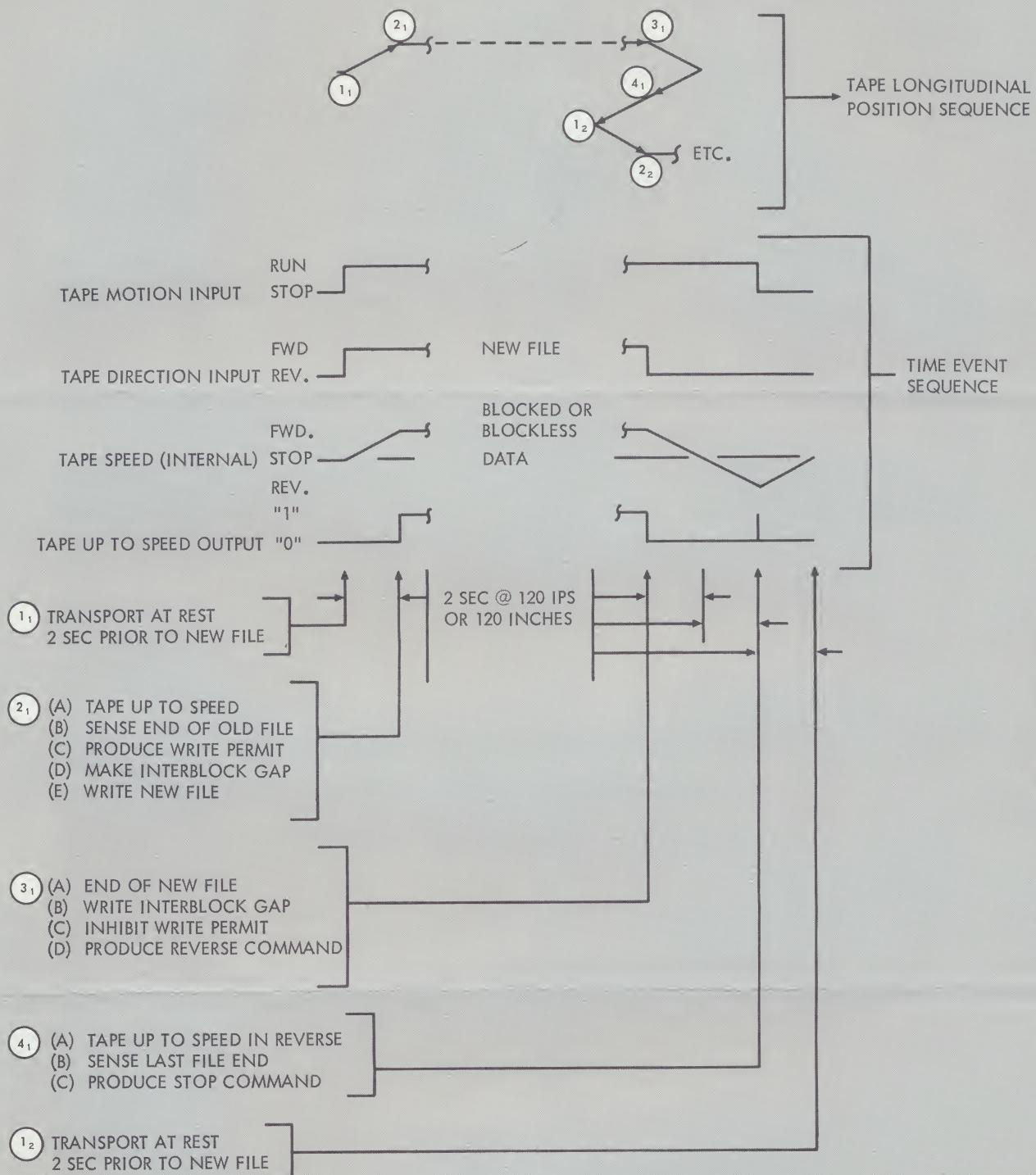
## WRITE AMPLIFIER (each card)

FUNCTION	Amplitude Logic "1"	Amplitude Logic "0"	Threshold Amplitude	Rise & Fall Time (max)	Pulse Width	Input Impedance (min)
DATA INPUT						
CLOCK INPUT (NOTE 4)	$2 \pm 0.7$ vdc	$0 \pm 0.4$ vdc	1.0 vdc	.25 $\mu$ s	.5 $\mu$ s min.	3.3 K ohms
RESET (LRC) (NOTE 4)						
WRITE PERMIT (NOTE 5)	$2 \pm 0.7$ vdc	$0 \pm 0.4$ vdc	1.0 vdc	.25 $\mu$ s	Duration of record	1.0 K ohms (NOTE 4)
WRITE ENABLE (FILE PROTECT) (NOTE 4)	9 vdc $\pm$ 1% enables (this command is generated internally by the transport)					
OPERATING POWER	9 vdc $\pm$ 1% at 125 ma					
TYPE RECORD	NRZM					
TEST POINTS	Input to head driver					

## SKEW DELAY

FUNCTION	Amplitude Logic "1"	Amplitude Logic "0"	Threshold Amplitude	Rise & Fall Times (max)	Pulse Width (max)	Delay (min)	Input Impedance (min)	Output Impedance (max)
READ STROBE OUTPUT (NOTE 6)	$2 \pm 0.7$ vdc	$0 \pm 0.4$ vdc	N/A	.25 $\mu$ s	.2 $\mu$ s	N/A	N/A	550 ohms
READ CLOCK OUTPUT	$2 \pm 0.7$ vdc	$0 \pm 0.4$ vdc	N/A	.25 $\mu$ s	Adjustable for 2 $\mu$ s	.5 $\mu$ s	N/A	550 ohms
TAPE SPEED INPUT HI, MED, & LOW (NOTE 2)	$0 \pm 0.4$ vdc	$2 \pm 0.7$ vdc	1.0 vdc	1 ms	Duration of record	N/A	3.3 K	N/A
OPERATING POWER	9 vdc $\pm$ 1% at 100 ma							
TEST POINTS	Input, delay adjustment							

1. DATA OUTPUT AMPLITUDE IS DEPENDENT UPON LOAD IMPEDANCE
2. SEE LOGIC TABLE ON BLOCK DIAGRAM FOR COMMAND COMBINATIONS FOR EACH TAPE SPEED
3. SPEED COMMANDS ARE PRESENTED TO ALL AMPLIFIER CARDS IN PARALLEL. IMPEDANCE SHOWN IS FOR EACH CARD
4. WRITE INPUT COMMANDS ARE PRESENTED TO ALL AMPLIFIER CARDS IN PARALLEL. IMPEDANCE SHOWN IS FOR EACH CARD
5. WRITE PERMIT COMMAND MUST BE PRESENT NOT LESS THAN 1MS PRIOR TO RECORDING OF DATA
6. READ STROBE IS USED TO CLEAR SKEW CORRECTION REGISTER IN READ AMPLIFIER AND IS NOT FOR EXTERNAL USE

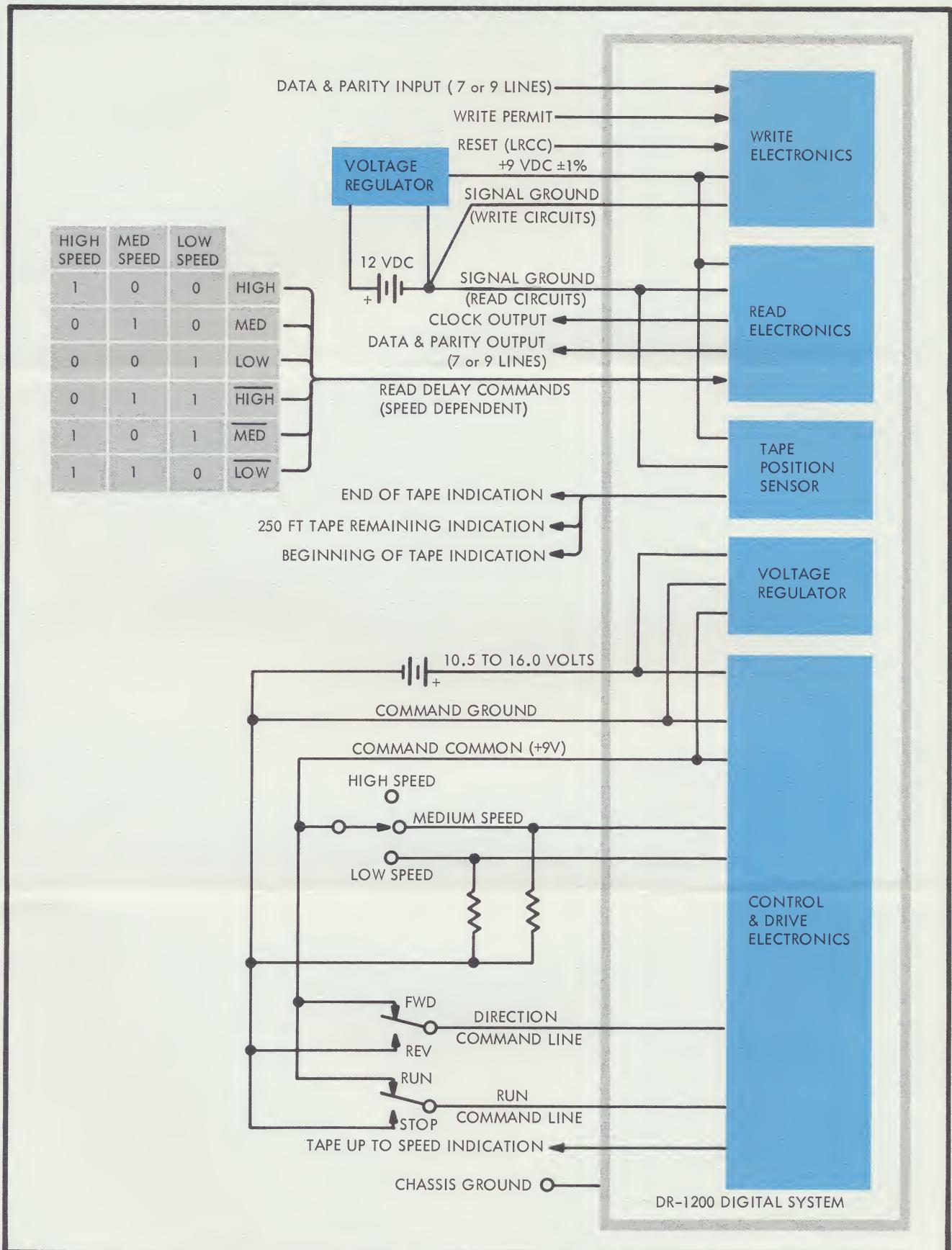


TYPICAL METHOD OF RECORDING DATA FILE WHEN EACH FILE ENDS IN A STOP COMMAND. MINIMUM INTERFILE TIME AT 120 IPS IS 8 SECONDS.

TAPE ACCELERATION FOR THE HIGHEST TAPE SPEED OF A GIVEN TAPE SPEED RANGE IS  $60 \text{ INCHES/SEC}^2$ .

TIME FOR THE TAPE TO REACH TERMINAL SPEED IS THE SAME FOR ALL SPEEDS WITHIN A GIVEN TAPE SPEED RANGE.

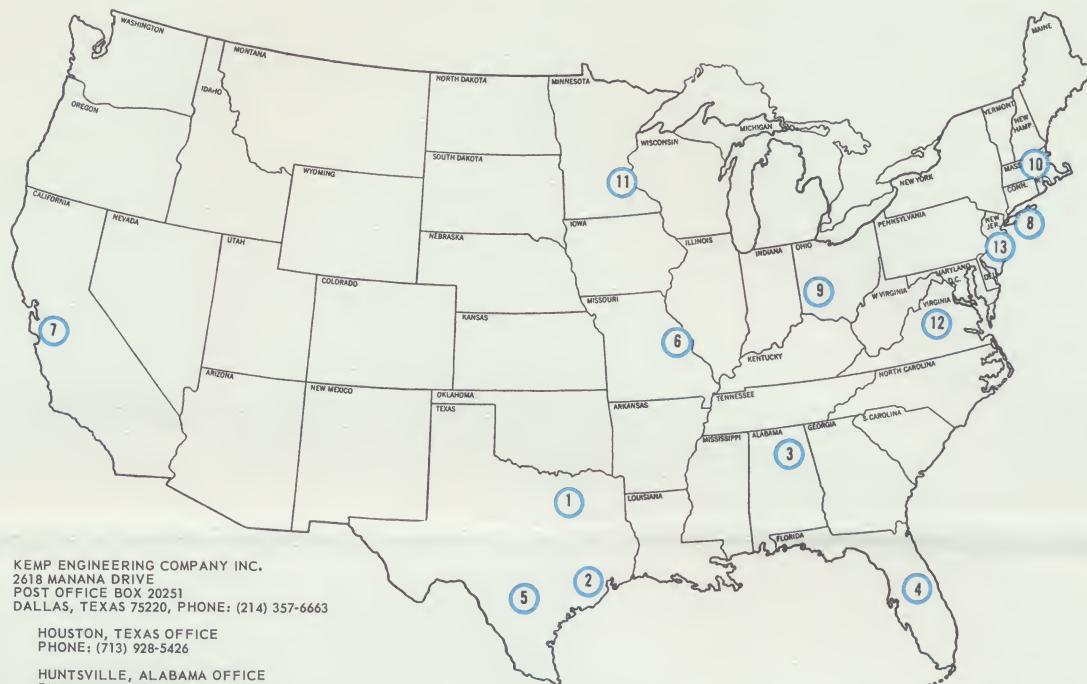
**Typical Use of DR-1200 Transport When Creating Gapped IBM Compatible Tapes**



*Interface Diagram*

NOTE: THIS IS THE STANDARD INTERFACE CONFIGURATION. OTHER CONFIGURATIONS ARE AVAILABLE ON SPECIAL ORDER

Contact the following representatives in your area for additional information.



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- 2 HOUSTON, TEXAS OFFICE  
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- 3 HUNTSVILLE, ALABAMA OFFICE  
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- 4 ORLANDO, FLORIDA OFFICE  
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- 5 SAN ANTONIO, TEXAS OFFICE  
PHONE: (512) 344-1841
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- 7 NORTON ASSOCIATES  
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MILL BRAE, CALIF. 94031, PHONE: (408) 948-9157  
(408) 948-3024 ANSWERING SERVICE
- 8 MANUFACTURERS REPRESENTATIVES INC.  
55 CENTRAL AVENUE  
FARMINGDALE, LONG ISLAND, N.Y. 11735  
PHONE (516) 293-9696

- 9 CUSTOM ENGINEERING COMPANY  
POST OFFICE BOX 501  
FAR HILLS STATION  
DAYTON, OHIO 45419, PHONE: (513) 298-5246
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- 13 BERKELEY HEIGHTS, NEW JERSEY OFFICE  
PHONE: (201) 464-5100

Parsons is actively engaged in the design, development, and manufacture of electronic and electromechanical systems and components for military and commercial applications.

Major areas of activity include:

- VCO's, A-D CONVERTERS, COMMUTATORS
- INSTRUMENTATION MAGNETIC TAPE RECORDING SYSTEMS
- ELECTRONIC MISS DISTANCE INDICATOR SYSTEMS

Technical information on these systems is available on request.



## THE RALPH M. PARSONS ELECTRONICS COMPANY

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